Production of Walleye in Plastic-Lined Ponds

by Jay Rudacille and Alan Johnson
Rathbun Fish Culture Research Facility
15053 Hatchery Place
Moravia, Iowa 52571
(641) 647-2658
jay.rudacille@dnr.state.ia.us; alan.johnson@dnr.state.ia.us

The Iowa Department of Natural Resources (IDNR) recently constructed ten one-acre and six one-tenth-acre plastic-lined ponds at the Rathbun Fish Hatchery and Rathbun Fish Culture Research Facility, respectively. Prior to the construction of these ponds, no plastic-lined ponds existed in the IDNR fish hatchery system. It is anticipated that these newly constructed ponds will provide high quality walleye fingerlings for feed training, as well as stocking some 1.5 – 2 inch fish.

In the one-acre production ponds, research was continued regarding the optimal number of walleye fry to stock per acre. In 2004, fry stocking densities of 75,000 (75K) and 100,000 (100K) fry per acre were evaluated. Fry were stocked into ponds at 3-4 days of age and after an approximate 40-day culture period, the ponds were drained and fish were harvested. Our results show that walleye stocked in the 75K treatment were significantly larger than those in the 100K treatment. 75K ponds produced fish that averaged 694.3 fish per pound, whereas 100K ponds only produced fish with a mean size of 864.2 fish per pound. Average fish length for walleye in the 75K treatment was 47.3 mm (1.86 in), while fish in the 100K treatment averaged 44.2 mm (1.74 in). Survival rate for walleye in both treatments was excellent, ranging from 87.7% to 90.0%.

In 2004, we continued research in the one-tenth-acre research ponds which explored a different avenue of feed training walleye, known as "in-pond" feed training. This alternative method involves training fish to feed in outdoor ponds versus indoor raceways. In the previous year's experiment, only 4.4% of fish consumed prepared feed in the pond. It was reasoned that consumption was low because there was adequate amounts of natural prey for walleye to eat until harvest. In 2004, we wanted to ensure that the fish had ample opportunity to consume prepared feed in the absence of natural prey, so harvest date was varied. The two treatments were "normal harvest" (NH) and "delayed harvest" (DH). NH ponds were harvested at the typical time, whereas the culture period for DH ponds was extended by 10-days. Lengthening the culture period by 10 days had three effects: (1) fish size decreased from 902.2 fish/lb to 409.8 fish/lb, (2) survival rate decreased from 92.1% to 46.9%, and (3) consumption of prepared feed increased from 37.3% to 55.9%. While "in-pond" feed training shows promise, further evaluation and refinement is warranted.